THE CHEMIST

DECEMBER 1951 VOLUME XXVIII No. 12

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(See page 509)

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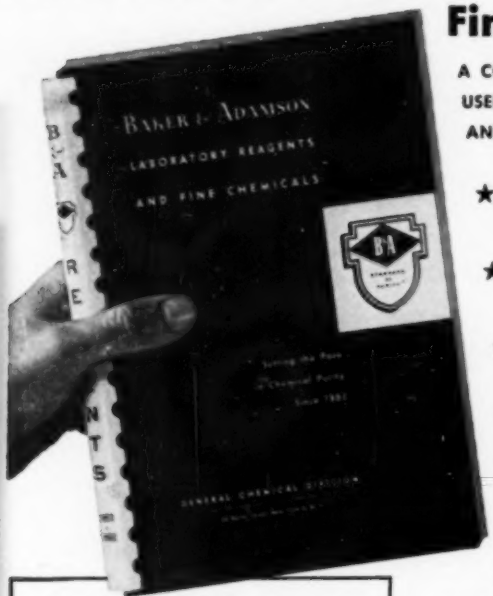

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To Receive Honorary AIC Membership

Dr. Ernest H. Volwiler, F.A.I.C., president and general manager of Abbott Laboratories, will be presented with Honorary Membership in THE AMERICAN INSTITUTE OF CHEMISTS at a meeting of the Chicago Chapter on February first.

The citation accompanying the honorary membership commends Dr. Volwiler "for his great service as a leader in the chemical profession and for his contributions to better cooperation and understanding among chemists."

1952 Annual Meeting

The Twenty-Ninth Annual Meeting of THE AMERICAN INSTITUTE OF CHEMISTS will be held May 7-8, 1952, at the Hotel Commodore, New York, N.Y. The Chairman of the Committee on Arrangements is Dr. Maurice J. Kelley, Nopco Chemical Company, Harrison, New Jersey. Details about the program will appear in later issues of THE CHEMIST.

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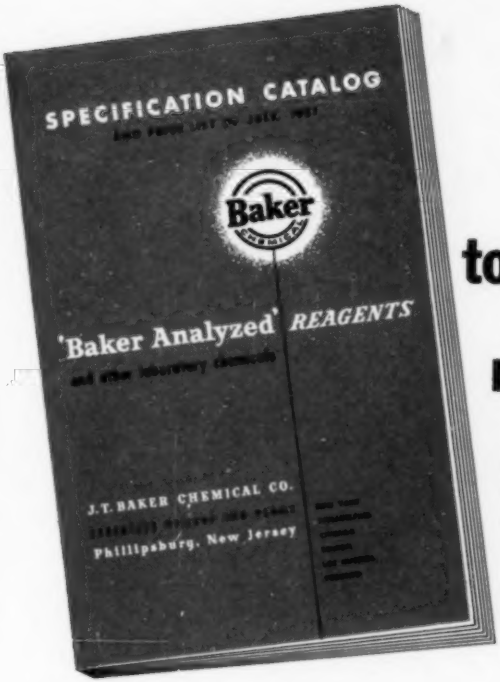

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EDITORIAL

The Objectives of The American Institute of Chemists

The year 1951 approaches its end and the birth of the New Year is at hand. Members of THE AMERICAN INSTITUTE OF CHEMISTS are refreshing their minds on the objectives of the INSTITUTE; planning to participate more fully in AIC activities during the coming months (See meeting dates on page 536), and giving serious thought to the chemist's relationship to the world in which he lives (See Dr. Ott's article on page 509).

The Objectives of THE AMERICAN INSTITUTE OF CHEMISTS are to:

(1) Provide and enforce a code of conduct which merits public esteem and justifies confidence in the integrity of the chemist;

(2) Establish and maintain a standard of proficiency of such excellence as to insure competent and efficient service;

(3) Secure an adequate basic training for the profession, and admit to fellowship in the Institute only those of proved education, experience, competency, and character;

(4) Strive to enhance the prestige and distinction of the profession so as to extend its influence and usefulness;

(5) Establish and maintain a register of its membership in which there will be a complete record of the training, experience, and fitness for service of each individual member;

(6) Seek to improve the economic status of the profession by cooperating with employers and the public to secure a satisfactory appreciation and evaluation of the services of the chemist;

(7) Provide a means for the appropriate recognition of distinguished service to the profession;

(8) Cooperate with all the agencies serving chemistry to make the profession of chemistry a powerful factor in the advancement of intellectual and material progress in the United States of America, to the end that this nation shall assume its rightful place as a leader among the nations of the world in scientific thought and accomplishment;

(9) Lend support to the work of the chemical societies in the education of the public to a better appreciation of the contribution of the chemist to world progress; and

(10) Render such other services to the profession as developments shall warrant and THE AMERICAN INSTITUTE OF CHEMISTS shall approve.

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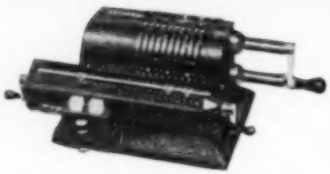

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Adviser: Dr. Maurice L. Moore, F.A.I.C., who joined the Vick Chemical Company's research staff in an advisory capacity, October first. He has been director of research and development for the Smith, Kline and French laboratories, Philadelphia, since 1947.

Returned: A. C. Zettlemoyer, F.A.I.C., professor of chemistry and research director of the National Printing Ink Research Institute at Lehigh University, Bethlehem, Pa. from a two-months trip to Japan. He was a guest of the Graphic Arts Industry of Japan and consultant on printing ink problems. He spoke at Kyoto and Tokyo Universities.

Promoted: Malvern J. Hiler, F.A.I.C., from executive vice president to president of the Commonwealth Engineering Company of Ohio, Dayton 3, Ohio. He is a graduate of the University of Michigan and has been previously associated with Sharples Solvents Company, Sharples Chemicals, Inc., and Stepan Chemical Company.

Lecturer: Dr. Alexander Silverman, Hon. AIC, who spoke October 12th, on the "Importance of Glass Collecting," at the American Ceramic Society meeting, Corning, N.Y. At the 75th Anniversary meeting of the American Chemical Society, he exhibited his "Motion-picture Portraits of Eminent Chemists." He spoke on "Cultivating Genius" before the Professional Training Section of the International Congress of Chemistry, September 12th.

Retired: Dr. Martin Meyer, F.A.I.C., as professor of chemistry at Brooklyn College, N.Y., on November first. He will continue his activities as technical consultant and director of the Chemical Branch, 1026 ORASU, First Army.

New Position: Dr. Ralph T. Nazzaro, F.A.I.C., formerly with Texon, Inc., South Hadley Falls, Mass., is now with the Westfield River Paper Co., Russell, Mass.

I am Proud to Be a Chemist

Dr. Emil Ott, F.A.I.C.

Director of Research, Hercules Powder Company, Wilmington, Del.

(Acceptance Address upon receiving the Honor Scroll of the Pennsylvania AIC Chapter.)

DURING my school days many years ago I became fascinated with science. This led to scientific studies followed by an academic and later an industrial career in chemistry. All phases of these studies and work I found not only interesting, but also rewarding in results and in satisfaction.

Through the years, as I became better and better acquainted with my fellow workers in the field of science and technology, I became aware of an evergrowing pride in my colleagues and my profession. Why? Because this group is so effectively at work in the important realms of *Truth, Progress,* and the *Golden Rule.*

This, then, is the theme that I hope to develop simply and noncontroversially. Each of you can elaborate further in your own individual way.

The followers of science and technology must search everlastingly for *Truth*—that is, the facts and the laws which govern our physical world. This work is tedious and difficult and requires a high measure of self-discipline, devotion to duty, and integrity. A strict code applies that the truth may not be falsified, and that validity must be checked and double checked. It is rewarding inasmuch as every bit of truth thus unearthed contributes to a larger foundation for further building.

It is most fascinating and soul-satisfying to explore the secrets of Nature and to help replace confusion with order and ignorance with knowledge. This close contact with the mysteries of Nature and the inescapable realization of the infiniteness of Creation fill us with solemn wonder.

The important foundation for the betterment of mankind, or *Progress,* may be defined as the freeing of man from the most primitive struggle for survival. By *Progress,* man can have free time and security to engage in activities which lead to the higher fruits of human effort, which we call civilization and culture. Earlier civilizations, more limited in resources, laid their foundations through an unequal distribution of work load and goods.

Many had to work extra hard, with a minimum of food and shelter and often as slaves, so that a few

were freed for higher pursuits. These few who had the opportunity to progress beyond their fellowmen demonstrated the growth and quality potential of the human being, thus widening man's horizons and standards. The demonstration of how man could develop when given the chance must have created a desire to make such opportunities accessible to many more. This could only be accomplished, however, by making labor available in other forms and by producing an increased supply of the world's goods. That this happened is a tribute to the workers in scientific and technical fields who have thus contributed tremendously to the freeing of man. Clothing, shelter, food, health, transportation, and communication, undreamed of even by kings and queens of earlier civilizations, are accessible today to millions. As progress in science and technology continues, the accompanying benefits reach increasingly greater numbers of people all over the world.

The Golden Rule

Now, for the third point in my thesis—the philosophy of the *Golden Rule*. The search for truth and the use of logic make for a reasonable approach of problems, including the field of human relations. It becomes inevitable that scientists and technologists find that the Golden Rule is the best instrument for dealing with their fellowmen.

The discoverer of a new fact or a law of nature, irrespective of sex, race, religion, or nationality, has the respect of his colleagues. Thus, within the profession true brotherhood of man is, indeed, a reality. Exceptions do exist, but they have always been considered a disgrace rather than a virtue, with ultimate eradication a foregone conclusion. Following the Golden Rule within the profession leads as a matter of course to a similar approach elsewhere. The Golden Rule of doing to others as we would have them do to us is a reasonable instrument of human relations. It comes naturally to the searchers for facts and to the creators of more for everyone. Its use is a fundamental part of our profession's code of ethics and a necessity for guarding against misuse of new potentials we have helped create.

What has been said does not imply that scientists and technologists are the only followers of Truth, Progress, and the Golden Rule. Indeed, there are many others. Nor is it implied that members of our profession are only driven by lofty motives, such as unselfish service to mankind. Actually, we may be motivated by self-interest. However, it is axiomatic that we are adding to the positive benefits for *all* humanity when we build on *Truth*, *Progress*, and the *Golden Rule*.

No member of our profession may be found in opposite camps of falsity, retrogression, or intolerance. To re-

peat: We belong to our profession by virtue of our work in and for the realms of *Truth, Progress,* and the *Golden Rule.*

Many feel that our profession should take an increasing interest in government affairs and politics. I am in agreement with this, and I am convinced that the principles which we follow in our profession could make valuable contributions to this field. Should we apply, however, the dictionary definition: "Politician now commonly implies activity in party politics, especially with a suggestion of artifice or intrigue," then I would insist that our profession should not participate except in corrective measures.

Truth

Negative idealogies distort the truth and practice falsity by necessity. Thus, they cannot tolerate true science. It is typical of these systems that they suppress science or perhaps, more often, substitute a pseudo-science, manned with party followers but never with true scientists. One may wonder why this disguise is attempted. I believe the situation is clear — the people in general have come to know instinctively that there is something inherently good in science and that its complete loss would be severely felt. They might suspect the system which brings about such a dubious change. However, a false system cannot afford suspicion followed by inspection; hence, the attempt at deception.

Progress

Regimes which enslave labor or those which enforce restrictions of sound productivity are suspect. *Only the production of more goods and fewer hours of work for every one can lead to true progress of mankind.* Some may feel that this is a too materialistic view of civilization. If progress remains limited to goods and leisure hours alone, then I must agree. But these things are a necessary foundation for other cultural developments.

It is morally right that a man should be enabled to work fewer hours, but it is morally wrong that he should be arbitrarily compelled to produce less than he easily could during his hours of work. It is equally wrong to obtain less from the soil or the factory than one could. Temporary setbacks cannot always be avoided, but we must in the long run increase productivity and lighten toil, so that civilization can grow and its fruits be made better and more plentiful. Only thus can the full beauty of the dignity of man come to flower. The vital role which chemists and chemical engineers as well as all other groups of our profession have played in true progress can make us feel justly proud.

The inherently positive contribution of our profession to progress, which I have emphasized, is some-

times sincerely questioned, because the knowledge and power for good, which we help create, can also be abused for destruction. Of course, this is inherent in all knowledge and power; motivation of use is regulated by the ethics of the user. If the ethics are poor, the result will be bad. But certainly the discoverer or developer of new power cannot singly be held responsible for what other human beings may do with it, nor can the profession control and enforce proper usage. This is a problem of human morality; all that our profession can do is to help adjust this morality to new realities. I do not believe that we have the right to withhold useful information from our fellowmen just because they might misuse it. Actually, our code of ethics requires that we not only search for the truth, but that we also communicate our findings.

Even the simple power of a man's hands can be used to lift up a fallen brother or to choke him to death! It is true that with the growth of our power potential, any single individual can do increasing damage. Today, one of the most lethal instruments in peacetime is not a weapon but the automobile. Is its development through technology anticivilization? Of course not!

Unfortunately, there is an important region of human affairs where the Golden Rule is not used! I am referring to the killing and destruction in warfare. Here by agreement at best the rule that "the end sanctions the means" is employed. Members of our profession as well as other honest believers in the Golden Rule are dissatisfied with this situation and many are working towards a correction. But progress is slow; war has been with us since the beginning of mankind and many people believe that it cannot be eradicated. I am convinced that this is wrong. Legal procedures can replace the taking of decisions into one's own hands for nations just as well as it has been done for individuals. But we must learn to control effectively the negative elements through a suitable police system, coupled with courts which are guided by the Golden Rule.

I am strongly convinced that the determination and correlation of facts, the increasing of productivity, and the application of the Golden Rule are useful and adequate to enable all men of good will to make this a better world for almost everyone. These basic principles have guided us to much accomplishment, but a great deal more is possible. Let all of us who believe in these principles work unceasingly to spread their application and influence not only in fields where they are now used, but, which is even more important, also in fields where they are now inadequately or not at all employed. It is my belief that such efforts will lead to order instead of chaos in the interrelations of peoples.

Emil Ott — An Appreciation of His Scientific and Professional Contributions

Dr. Walter J. Murphy, Hon. AIC

Editor, The American Chemical Society

(Presented on the occasion of the award of the first Honor Scroll of the Pennsylvania AIC Chapter to Dr. Ott.)

NO MAN can reach the heights of success that Emil Ott has achieved without making a number of substantial contributions. The honor Dr. Ott is receiving does not come to him primarily for his scientific and technical accomplishments. This particular honor is being bestowed on him for his notable contributions to the advancement of the profession. Therefore, I shall touch lightly the scientific and technical aspects of Dr. Ott's career and discuss his professional side.

We see in Dr. Ott a shining example of the type of success story which indicates the golden opportunities that exist in this country. After the usual vigorous formal training, so characteristic of European universities generally, Dr. Ott received the doctorate in physics and chemistry, in 1927, from the Swiss Institute of Technology. During the final two years of his study at the Institute, he served as instructor in physics and was placed in charge of a large group of students being trained in physical tests and measurements.

While the old world, and particularly Zurich, possessed many charms for Dr. Ott, he was inspired by the pioneering instinct that has been a dominating influence throughout his life and, after much soul-searching, he decided to gamble on his future in the United States.

For one year he was with the Stauffer Chemical Company in San Francisco. Having once accepted the well-known Horace Greeley advice, "Young man go west," he then disregarded the admonition and, in 1928, accepted a fellowship of the American Petroleum Institute at Johns Hopkins.

Bob Cairns, assistant director of research of Hercules Powder, and a very close friend of the man we honor, describes the Johns Hopkins period of Dr. Ott's career in the following words:

"I first met him when I was a graduate student of Johns Hopkins University, and he was an assistant professor in the School of Chemistry. There he demonstrated his unusual ability as an experimental physical chemist in the applications of X-ray

diffraction analyses to chemical systems. His performance at Hopkins was rather amazing, since in the course of two years he acquired a dozen graduate students—actually more than any except that famous member of the organic chemical staff, Dr. E. E. Reid, Hon. AIC. Those students, of whom I was one, were attracted to Dr. Ott, not by his reputation (for he had just come to this country in 1927), but because of his obvious abilities, as a research man and teacher."

I suspect Dr. Ott, at least unconsciously, had a hankering for business and industry. During a summer period he exposed himself to the enticement of industrial research and became a consultant for the Hercules Development Department. Hercules' gain was Johns Hopkins' loss. The academic ivory tower gave way to the more exciting possibilities in industrial research. A mutuality of interests led Emil Ott to remain with Hercules, and his subsequent career in the research organization of that company has been spectacular.

Research at Hercules

Between 1933 and 1937, he was research chemist; between 1937 and 1939, he became head of the research division at the Hercules Experiment Station, supervising commercial research development of new processes, and a wide variety of pilot plant operations.

In 1939, he was selected to be the first director of research for the entire company and was made responsible (1) for the administration and coordination of the company's research program carried out at the central research laboratories and in the twelve research laboratories at plant locations; and developed (2) the company's present team approach and organization of its fundamental research as well as its development work: I am sure you are all acquainted with the fundamental fields of interest of Hercules, including cellulose and cellulose derivatives, rosin, terpene chemicals, plastics, synthetic resins, high polymers, papermaking chemicals, intermediates, and explosives—diversification at its best.

Any one who has had the pleasurable experience of inspecting at close quarters the beautifully situated central research laboratories of Hercules near Wilmington, recognizes immediately that it is unique in many respects and in many of the concepts incorporated in the philosophy of research that prevails there. This is true of its physical appearance, and it is equally true of the administrative approach and the relationship of administration to actual research work.

The original plan for the central experiment station was conceived in the late 1920's. Under Dr. Ott's able direction, the plan has been fully consummated. Today the Station is one

of the country's most outstanding research centers.

The central experiment station reflects in many ways the dominent characteristics in Dr. Ott's personality. While no one has a greater respect for pure or fundamental research than does Emil Ott, he is honest and frank in his philosophy and presumes that industrial research means practical applications, large-scale production, and profits.

Both fundamental and applied research are carried on side-by-side at the Station. No one is in an ivory tower, certainly not the director of research. Contacts between sales, production, and research people are constantly maintained at all levels from the bench chemist to the research director. This type of philosophy of operation was described in detail in Ott's article, "The Team Approach in Research and Development," published in C&EN in June of last year.

Dr. Ott has inspired his men by being a combination of leader and personal confidant and by doing what should be the obvious thing to do, but frequently is ignored, that of giving credit where credit is due.

Dr. Ott's successes as a scientist, technologist, and leader can be measured in several ways. Certainly the balance sheets and the profit and loss statements of the past ten years are eloquent testimony of the practical value of the research team of which he is the leader. Then, too, there are the Ott trained and inspired men who have come up through the research department, who hold important executive positions in the company. He is a man of great versatility.

Professional Activities

Much of Dr. Ott's success as director of the Hercules research organization is due to the same characteristics that have made him a prominent character in the scientific, technical, and professional societies.

For more than twenty years, he has been intimately connected with the American Chemical Society activities and the activities of a great many other organizations, including THE AMERICAN INSTITUTE OF CHEMISTS, which honors him on this occasion, the American Institute of Chemical Engineers, the Society of Chemical Industry, the American Association for the Advancement of Science and particularly the Gordon Research Conferences.

He joined professional societies immediately upon his arrival in this country. He did not wait for some one to "sell" him that societies were good "buys"—he felt then as he feels now that as a professional man he has the duty and responsibility of working in behalf of these organizations and the profession they represent.

Dr. Ott's association with the ACS in the Wilmington and Philadelphia

area needs no elaboration. My first intimate contact with him was when I asked him to become a member of the Advisory Board of *Industrial and Engineering Chemistry* and *Chemical and Engineering News*. Our contacts became even more intimate when he was elected to the ACS Board of Directors for a four-year term in 1948, representing the States of Delaware, Ohio, and Pennsylvania.

Many men accept positions of honor and responsibility, with little thought as to the true significance of the act of acceptance. They desire the honor, but often evade the responsibilities. This is not the Ott method of operating.

As a member of the Advisory Board of *Industrial and Engineering Chemistry* and *Chemical and Engineering News*, he felt he had a personal responsibility to study the problems of the publications and to give those problems the benefit of his considered judgment. He was regular in attendance, participated actively in the discussions, and contributed materially in new and novel ideas for the journals.

His outstanding record on the Board of Directors amply demonstrates that he is a glutton for punishment when difficult assignments are being handed out. Again and again, I have seen Charles Thomas, our Board Chairman, cast an eye at Emil, and then pop the question, "Emil, will you take on the chairmanship of this committee?"

As Al Smith used to say, "Let's look at the record." Emil Ott was a member of the Board's Committee on Member and Public Relations, and chairman of the committee in 1950. He was chairman for two years of the ACS Board's Committee on Financing of ACS publications. He was chairman in 1950 of the Committee on Corporation Membership. This mere recital of his board assignments does not begin to convey the hours and hours of work entailed, nor the variety of substantial contributions to the welfare of the Society that have resulted from Dr. Ott's labor.

Who was better qualified to assume the chairmanship of two committees, (1) Financing of ACS publications, and the other, the Committee on Corporation Membership, than the man who has proven a leader in science and technology and who possesses sound business judgment.

The American Chemical Society has had several crises in its seventy-five years of existence. They have been varied in nature. Dr. Ott almost single-handed resolved the most recent one. It was not generally recognized throughout the Society in the post World War II days that the rapid growth in chemistry and chemical technology was placing a financial burden on the Society that

might well lead to complete financial disaster. Deficits of as much as one-quarter of a million dollars annually were reported in 1948, 1949, and 1950 in the operation of *Chemical Abstracts*. One does not have to be a financial wizard to understand why we needed desperately a new subscription pricing plan for *Chemical Abstracts* that would ease this ever-increasing strain on the Society.

While the need was perfectly obvious, a workable solution was mighty elusive. It was left to Emil Ott, aided and abetted by his committee and working with officials of the Society in Washington, to develop the pricing plan which in its initial year of operation has demonstrated its soundness and workability. Likewise it was Ott and his associates on the Board who proposed the abolition of the outmoded corporation membership setup in the ACS and in its place the introduction of the corporation associates plan adopted at the Council Meeting in Cleveland, last April. This new plan of enlisting active cooperation and financial support of industry for our nonprofit scientific journals promises financial stability for the ACS and the opportunity of further expansion of existing publications, possibly the introduction of new ones, and the development of other activities. These are highly desirable projects, but ones which have been postponed indefinitely while the Society sought a practical solution to the annual deficits of *Chemical Abstracts*.

Few members of the Board of Directors of the Society have contributed more substantially to the overall welfare of the Society than has Dr. Ott, and his notable contributions were made in one term as director. Emil Ott can never be president of the United States, but the Society definitely has no rule to the effect that its top office cannot be held by one who is foreign born.

If one does not know Emil Ott or learns about him only through this meager description, one might suspect that he is a one-sided individual—but he is far from that. Like so many foreign-born, he seems to have the innate ability to work hard and to play hard. He knows how to enjoy life and how to relax when relaxation is in order. His hearty chuckle is a stimulant to others. His warm and engaging smile is the perfect example of how to win friends and influence people. Unlike so many of us, he does not get work and play mixed, hence he maintains a high efficiency average in whatever he is doing.

By personal example and by his writings, he has inspired thousands in our profession. He is a rugged individualist, yet one who believes strongly in cooperation with others and practices this belief in his day-by-day contacts with the profession. Most fortunately his early interest in physics gave way to an intense desire

to be a chemist. Our profession, and indeed, all professions are richer for the inspirational leadership of Emil Ott. Every honor he has received, including this Honor Scroll, has been earned the hard way and therefore richly deserved. I think the title of Dr. Ott's address, "I am Proud to be a Chemist", is indicative of what he stands for and how he is regarded in our profession. When he speaks, whether it is in the Board room or on the lecture platform, he speaks with an authoritativeness that everyone respects and admires. The Ott story is a success story of the first order. I am going to be so bold as to paraphrase the title of his address: "We are Proud that Dr. Ott is a Chemist."

Presentation of The First Honor Award of The Pennsylvania AIC Chapter to Dr. Emil Ott

President Lawrence H. Flett, AIC

IN THE chemical profession, there are many societies, conferences, institutes and other associations, both large and small, devoted to science and technology. Indeed, as every new branch of chemistry develops, a group specializing in that particular branch is soon formed. Rapid progress in the field of chemistry during the past fifty years has made the list of such organizations very, very long. In contradistinction to these scientific groups, THE AMERICAN INSTITUTE OF CHEMISTS is concerned with the chemist—how he works, how his research can be made useful, how his interminable study can be simplified, how his relations with others can be improved, and how he can be better understood.

Chemists work in the circumscribed area of their science, walled in by the limited frontiers of chemical knowledge. Each of the many chemical groups meets to discuss the progress that it is making in its particular section of this circumscribed area. The inevitable result of these discussions is the evolution of new fundamental truths which push back the walls of the prison house in which the scientists live.

This generation has witnessed an upsurge in scientific discussion, which little by little has brought about a widening of the sphere of our knowledge. Greater knowledge and understanding soon lead to technical developments from which everyone benefits.

These scientific organizations and their meetings take an unbelievable

amount of planning and administration. They make an unreasonable demand on the chemist's free time. The people who organize them and those who participate in them do so at considerable personal sacrifice. Nevertheless, it is their efforts that have made possible the rapid development of the science of chemistry.

It would be difficult to find any gathering devoted to progress in chemistry at which the Hercules Powder Company was not represented, and foremost among their representatives is Dr. Emil Ott, not just as an attendant but as a participant and an administrator. Organizations have looked to him to devote the time and thought necessary to make their meetings productive and successful. I would like particularly to mention his contribution to the re-establishment of the Gordon Research Conferences, which have had such a profound influence on our chemical progress.

We would be remiss if we did not mention Dr. Ott's kindly and pleasant direction of those meetings where he is chairman. Chemists, by nature, acquire a blind devotion to their science, and in these meetings where truth is to be evolved, there can be no compromise; there is only a right and a wrong. The chemist who is tolerant and broad-minded in other matters is often a bigot where his science is concerned. The ability to keep meetings which are devoted to the fundamentals of chemical science on a pleasant, successful and productive basis is indeed an art—an art in which Dr. Emil Ott is a past master.

The effort necessary in connection with the planning and organizing of the many scientific societies is not something that can be bought. It is something that is given, without thought of reward, by those who love their science and who love their fellow chemists. Members of the INSTITUTE throughout the country will be the first to commend the presentation of the First Honor Award to Dr. Emil Ott in recognition of this important service to the profession.

Emil Ott, I have been granted the authority by the Pennsylvania Chapter of THE AMERICAN INSTITUTE OF CHEMISTS to present to you its First Honor Award. The citation reads:

For untiring efforts and at personal sacrifice in serving his profession most outstandingly by gathering scientists together to exchange knowledge in a creative atmosphere.

Drexel Institute of Technology Celebrates 60th Anniversary

The Drexel Institute of Technology celebrated its 60th Anniversary with a three-day Convocation at Philadelphia. A feature of the Convocation was a banquet held on October 31st, at which the Drexel Institute played host to representatives of seventy-five technical societies. This is the largest group of technical societies ever gathered together. THE AMERICAN INSTITUTE OF CHEMISTS was represented by President Lawrence H. Flett; by the Philadelphia Chapter Chairman, Ronald J. Baird, and by the Chapter Secretary, John H. Staub.

The banquet at the Bellevue-Stratford was held to honor the men and women of the engineering, scientific and management professions. Mr. Carlton S. Proctor, president of the American Society of Civil Engineers, Dr. Alan T. Waterman, director of the National Science Foundation and Mr. Earl P. Stevenson, F.A.I.C., president of Arthur D. Little, Inc., were guest speakers.

Chairman of the Convocation Francis S. Friel, in welcoming the delegates of the professional societies, stated:

"In honoring our professional societies this evening, we wish to express particular appreciation for the major contributions which they have made, consisting of: (1) The establishment of standards of ethics and accomplishment in the practice of the professions; (2) The establishment of standards of education for young people preparing to enter the professions; and (3) The encouragement of young people who have the interests, aptitudes and abilities to pursue those courses of higher education which will eventually qualify them for the professions.

"In the interests of national defense and national economic welfare, there is an urgent need for greater numbers of young people trained in the basic sciences, in engineering, and in the business and industrial management field. The professional societies are interested not only in increasing the numbers of young people who enter these fields, but in insuring their quality."

Then Chairman Friel asked the representatives of the professional societies present to convey the sincere regards of Drexel to their fellow members.

Appointed: Philip R. Tarr, F.A.I.C., as assistant to the president of Monsanto Chemical Company, St. Louis 4, Missouri. Mr. Tarr joined Monsanto in 1946 as assistant to the secretary of the Executive Committee, later in that year becoming assistant to Dr. Charles Allen Thomas, Hon. AIC, now president, but then the company's technical director.

The Teaching of Inorganic Chemistry

Dr. L. F. Audrieth

W. A. Noyes Laboratory of Chemistry, University of Illinois, Urbana, Illinois

(Presented at the World Chemical Conclave, New York, N.Y., Sept. 10th.)

THE renaissance of inorganic chemistry during the past fifteen years represents one of the most interesting recent developments in the field of chemical science. The importance which now attaches itself to a knowledge of this particular branch of descriptive chemistry has also brought with it the realization that all too few professional chemists can claim to have had adequate training in organic chemistry. Obviously, this poses a problem for our colleges and universities, since both undergraduate and graduate curricula must be modified, first to make up for this deficiency in the general training of professional chemists and secondly, to meet the demand for specialists in inorganic chemistry.

Inorganic chemistry is intimately related to both analytical and physical chemistry. It furnishes the major portion of the descriptive material for all branches of chemistry, with the exception of carbon chemistry. Inorganic chemistry is that branch of chemical science which deals with the properties and reactions of the elements and their compounds. Inorganic chemistry is supplemented for purposes of generalization, by appropriate theoretical and structural concepts which help to explain observed phenomena.

The freshmen courses offered in most colleges and universities—and often listed as courses in inorganic chemistry—are hardly to be considered as meeting the needs of the professional chemist for more adequate training in inorganic chemistry. These first year courses have become "survey courses with more emphasis frequently being placed on physical, organic, analytical and industrial chemistry than is placed on inorganic chemistry."[1] Textbooks used in these courses usually carry such titles as "General Chemistry", "Principles of Chemistry", etc. Rarely do they claim to emphasize inorganic chemistry. Perhaps this is as it should be, since "the vast majority of students studying general chemistry are not chemistry majors."[1] The trend towards an understanding of "principles", rather than a knowledge of factual material has also served to deemphasize inorganic chemistry in the

(1) Brown, H.C., and Rulfs, C.L., J. Chem. Education **27**, 437 (1950)

general chemistry course given today.

It is unfortunate that inorganic chemistry has been confused with general chemistry, since "this misconception has served to obscure the really great advances (in inorganic chemistry) in the technological fields. Inorganic chemical technology, metallurgy, and ceramics represent applied fields in which descriptive inorganic chemistry together with analytical and physical chemistry are employed to make possible the production of those commodities which have made chemical science so indispensable to modern living and have made the chemical industry so important a part of our national economy. The body of fact and theory which comprises inorganic, analytical, and physical chemistry is fundamental in chemical engineering, metallurgy and ceramics, and in such borderline fields as mineralogy, geochemistry, and nucleonics. Yes, even the organic chemical industry depends only in part upon carbon compounds, as is evident from the frequent reference to air, water, limestone, salt and coal as its basic raw materials!"[2]

There is a real need in the professional curricula of chemistry and chemical engineering for an upper-level course of instruction in inorganic chemistry. Such a course "should be taught on the foundation of certain basic principles of physical chemistry."[3] Training in "fundamentals" imples a thorough background in physical chemistry. Fernelius[3] lists the following topics as constituting the foundation for such an introductory course: "matter, energy, classifications of matter, particle nature of matter, atomic weights, atomic number, isotopes, elements, compounds, ionization, acids, bases, and nomenclature." A clear understanding of the "electronic distribution in atoms and simple ions" (atomic structure) of the "types of forces acting between atoms and the characteristic properties of resulting compounds" . . . and "some understanding of the fundamental properties of nuclei" (nuclear chemistry) is also required. An appreciation of the usefulness of structural inorganic chemistry is desirable.

It is important, however, that such a course also provide for instruction in the descriptive chemistry of the elements and their compounds and afford some knowledge of properties and reactions of inorganic substances. Chemistry deals with matter, not with abstractions. Chemical theory is not an end in itself, any more than grammar is the principle objective in the study of a foreign language. Despite the emphasis on fundamentals nothing can be gained from such knowledge unless it can be applied. "The wider one's knowledge of chemical factual material the more

(2) Audrieth, R.F., Ind. Eng. Chem. 43, 269 (1951)

(3) Fernelius, W.C., J. Chem. Education 43, 441 (1950)

valuable and more useful is a knowledge of theory". All of us have been "treated to the spectacle of graduate students who can glibly discuss such topics as resonance and hyperconjugation, but who are unable to utilize the periodic system or to suggest any reasonable methods for preparing and handling a simple gas such as hydrogen bromide."[1]

The statement is often made that presentation of the chemistry of inorganic materials should be based upon the periodic classification. It is common practice to discuss the elements group by group. On the basis of his own experience, however, the author is inclined to agree with Fernelius[2] that the presentation of descriptive material from the standpoint of the periodic classification does not necessarily result in the greatest amount of generalization and systematization. Routine discussions of this sort detract rather than arouse interest in the chemistry of the elements. "Actually one obtains more systematization by taking broad groups of compounds such as hydrides, halides, oxides, etc., and treating them systematically from the standpoint of the periodic table, structure, bond type, etc. In each instance general trends should be followed, if possible, in a quantitative manner." The last statement is particularly to the point since consideration of descriptive material is often much too qualitative in nature. Chemistry is an exact science and as such should be treated from an exact point of view.

But mere knowledge of fact and of theory is still far from sufficient. Chemistry is an experimental science. The practice of chemistry involves application of fact and theory to the handling of materials, to the development of techniques in order to acquire the ability to use equipment and apparatus both in the laboratory and in the plant where chemistry is put to work for the benefit of mankind. "If the undergraduate curriculum is to include descriptive inorganic chemistry, then appropriate laboratory work must be provided to bring the subject matter to life".[4]

To many chemists, methods for the preparation of inorganic chemical commodities are conventionally represented by simple equations. It is paradoxical, however, that inorganic synthesis represents an exceedingly difficult field, largely because of its variety and versatility. Few reactions can be regarded as standardized type reactions corresponding to those which are so common in organic chemistry. There are no simple criteria for the purity of inorganic substances, except through analysis. "More than background and training in inorganic chemistry are required to prepare many of the special classes of inorganic substances. The metallurgy of

(4) Walton, H.F., ibid, 43, 449 (1950)

the rarer metals demands both an intimate knowledge of the chemistry of the respective elements and familiarity with the techniques of electrochemistry and with operations at higher temperatures. Preparation of the ultra-pure materials needed for use in atomic reactors and in nuclear energy projects calls upon every known physical and chemical procedure for the elimination of impurities. So many complex compounds consist of organic molecules coordinated with the inorganic central atom that only those with adequate background in organic chemistry can hope to succeed".[3] Many other examples might be cited to show that the preparation of inorganic substances demands of the practitioner the maximum of experimental skill—and knowledge!

A laboratory course in inorganic preparations must definitely accompany a course in descriptive and theoretical inorganic chemistry. Such laboratory work must be designed to achieve at least three important objectives, first to give the student an opportunity to become familiar with the chemical elements and their compounds, secondly, to emphasize the methods of preparation by which their synthesis can be accomplished, and thirdly, to teach techniques in order that the student may acquire some knowledge of experimental methods, of the apparatus and equipment employed for handling inorganic substances. A beginning laboratory course in inorganic preparations can do little more than to stimulate interest and curiosity — but as a minimum, experiments should be chosen carefully to give some experience along the following lines: (a) purification by crystallization, distillation, and extraction; (b) handling of gases (vacuum and low temperature operations); (c) handling of liquids and solids which deteriorate upon contact with the atmosphere, or are toxic, or inflammable or otherwise hazardous and objectionable; (d) high temperature reactions both in the gas phase and in the molten state; (e) electrolytic oxidation and reduction reactions. Usual techniques are sometimes involved in the preparation of special classes of inorganic substances. If possible, opportunity should be afforded to become familiar (a) with reactions in non-aqueous systems such as liquid ammonia or 100% acetic acid, (b) with the use of ion exchange materials, (c) with thermite reactions, and (d) with the preparation of coordination compounds, of catalysts, glasses and amorphous materials.

There is no question but that the time has come to insist upon some training in inorganic chemistry for all who would call themselves professional chemists. It is to be regretted that the Committee on Professional Training of the American Chemical Society has not yet seen fit

to include such a requirement for certification of institutions which desire accreditation. Modification of undergraduate curricula to include a descriptive and theoretical course in inorganic chemistry accompanied by an appropriately organized laboratory course is definitely needed.

The situation with respect to specialized graduate training in inorganic chemistry is more difficult to evaluate. There are only a few universities where more intensive work in inorganic chemistry is offered — these schools have experienced a tremendous increase in the number of graduate students with majors in inorganic chemistry. Seminars, special topic courses covering research interests of staff members, advanced theoretical and descriptive courses with special emphasis on structural inorganic chemistry, appropriate laboratory courses, and thesis problems constitute the usual offerings of the few institutions where graduate training in inorganic chemistry has been developed. Again, the academic tie-up in which the teaching of general chemistry has accompanied the teaching of inorganic chemistry has made it difficult for the inorganic chemist in many institutions to carry out and to direct active research programs. This situation is gradually being changed for the better through the good efforts of the Committee on Professional Training with general reduction of excessive teaching loads.

Opportunities in the field of inorganic chemistry are being recognized, as is evident from the ever-increasing demand on the part of universities, industry and government laboratories for specialists trained in this branch of chemistry. Appropriate modification of graduate curricula to meet the demand is a self-evident obligation which colleges and universities must consider.

Appointed: Dr. Robert Mesrobian, M.A.I.C., as assistant professor of Polytechnic Institute of Brooklyn, N.Y. He received both the undergraduate and graduate degrees from Princeton University, and worked as research associate in the Polymer Institute.

To Georgia: Dr. Charles M. Buess, F.A.I.C., formerly research associate at Northwestern University, Evanston, Ill., now with the University of Georgia at Athens.

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Premedical Education Symposium: Scheduled for December 28th, at a luncheon at Benjamin Franklin Hotel, Philadelphia, by Alpha Epsilon Delta, the national premedical honor society, in cooperation with the American Association for the Advancement of Science, Section K; the American Society of Zoologists, and Beta Beta Beta Biological Fraternity. The program includes talks by Dr. John McK. Mitchell, "Social Problems in Medicine"; Dr. Maurice H. Greenhill, "Health problems of Social Origin", and Dr. Luther E. Woodward, "Emotional Factors in Social Health". Attention will be focused on the medical problems which emphasize the importance of the social sciences in the premedical educational program. All persons interested in premedical education and student guidance are invited to attend and participate in the discussion.

Reservations for the luncheon, $3.00, may be made by calling Robert Bennett, Sales Office, Benjamin Franklin Hotel, or by writing to Dr. Maurice L. Moore, 37 Whitemarsh Road, Ardmore, Pa.

Appointed: Dr. L. W. Bass, F.A.I.C., vice president, U.S. Industrial Chemicals, Inc., as chairman of the Committee on Equipment and Materials of the Research and Development Board, Department of Defense.

Elections: Announced by the Association of Consulting Chemists and Chemical Engineers, Inc., 50 E. 41st St., New York 17, N.Y., President, Erwin Di Cyan; Vice President, Earl D. Stewart; Secretary, William C. Bowden, Jr., and Treasurer, Foster D. Snell, F.A.I.C. Councilors (for three years), Robert S. Aries, F.A.I.C., Elliot A. Haller, Hugo Klein, Clarence E. Mange, and Robert V. Siebel.

Opposed: The Manufacturing Chemists Association, Inc., to the passage of S-2092 to change the "Capehart Provision" of the Defense Production Act of 1951. John A. Sargent, executive vice-president of Diamond Alkali Company, Cleveland, represented the Association before a Senate banking and currency sub-committee on September 17th.

New Vice Presidency: Created by Chas. Pfizer & Co., which elected John J. Powers, Jr., to fill the post. Dr. John E. McKeen, F.A.I.C., president, stated, "Mr. Powers initially will be on special assignment from my office assuming responsibility for all of the Company's foreign activities . . . during the present period of expansion and change in the scope and character of the foreign trade activities.

Moved: Meyer Scientific Supply Company to 211-215 North Eighth Street, Brooklyn 11, New York.

Specialized Training Through Chemistry Extension

Dr. Arthur Rose, F.A.I.C.

The Pennsylvania State College, State College, Pa.

(Presented at the World Chemical Conclave in New York)

THE lives of most organizations and most people are characterized by relatively long periods of routine work, interspersed with occasional periods of stimulation and new ideas. This paper has its origin in an unusual and stimulating experience involving the teaching of extension chemistry.

The actual experience took place about ten years ago. It would be of considerable interest to review the details of this extension work because of its unusual and fast moving nature and because of its magnitude as a chemistry instructional program. It is also of immediate interest because of the current and impending shortage of technical manpower. However, the real reason for recalling this bit of recent history lies in its significance for the immediate and long-range future. New circumstances, new people, and new needs in a new location stimulated never to be forgotten enthusiasm and unusual achievements. The present defense emergency may well lead to a repetition of the work of ten years ago, but it is the object of the present paper to point out the long-range peacetime possibilities of extension instruction in chemistry.

Extension instruction is particularly likely to develop new approaches to teaching and training in chemistry because its off-campus location relieves some of the restrictions of campus traditions. The combination of this with students who have a non-campus outlook and extra-scholastic experience and objectives, and the frequent use of part-time teachers with non-academic background, all create and stimulate new ideas. Unusual problems in instruction are encountered and extra effort, interest, and cooperation necessary between various groups increase the probability of significant new types of activity.

Types of Chemistry Training Suitable for Extension Instruction

Extension instruction is certainly not a preferred means for training professional chemists, but it seems peculiarly suited for each of the following types of training in chemistry:

(1) Continuation of the training of B. S., M. S., and Ph. D. graduates to bring them up

to date on developments after they graduate and, particularly, to keep isolated individuals or groups in contact with one another.

(2) Conception, testing, and development of new teaching techniques that would eventually enter into general campus use.

(3) Improvement of high school teaching of chemistry.

(4) Satisfaction of the laymen's growing curiosity as to what the chemists (and other scientists) are doing to his world.

Although the 1941-42 Pennsylvania State College extension chemistry programs to be described briefly here were of an emergency war-time nature, there was clear evidence of all of the preceding types of training that were going on as byproducts of the main effort. This will appear clear in the following outline of the above-mentioned programs.

Philosophy of General Extension and Engineering Extension at Penn State

The Penn State extension programs in chemistry have their origin in the general extension and engineering extension services of the College. This has been built around the philosophy of service based upon demonstrated needs and upon activities that are self-supporting. The needs are always objectively determined by a survey evaluated by the central extension office, but made by a local extension representative who is a resident of the area to be served.

Emergency Extension in 1940-41

The 1941 emergency resulted in a forced expansion of the general extension service. Although supported by the U. S. Office of Education EDT, ESMDT, etc.), the expanded work was carried out according to the plan already developed by the College. Among the first conclusions from the surveys of extension representatives was the fact that training needs were as urgent in the relatively less industralized central portion of the State as in the highly industrialized densely populated eastern and western edges of the State. The Pennsylvania State College is located near the geographical center of the State. Even the central area of the State is characterized by a large number of industralized areas of very small to moderate size, separated by agricultural and forest areas. This created entirely new problems for extension instruction in science. Most extension instruction in science is given in established college laboratory buildings.

Place of Chemistry in the Emergency Extension Activities

Chemistry extension before 1941 was almost non-existent at Penn State, probably because the most urgent needs in the eastern and western

border areas were served by the colleges located in those areas. Other needs were presumably not urgent enough to secure attention, in view of the difficulty and lack of experience in carrying out chemistry extension instruction in the central area of the State.

Chemistry in Introductory Engineering Subjects Program

During the winter and spring of 1940-41 many students were engaged in the Penn State training courses in drafting, mechanics, metallurgy, ceramics, and fuel technology. Chemistry instruction played only a small part in these activities, and the chemistry program was conventional general college chemistry. The experience with the winter and spring programs showed very definitely the need for a large number of men and women with proper basic training in the fundamentals of engineering and science. This led to the organization of a course in introductory engineering subjects. This was first given as full-time ten weeks summer (1941) work for new high school graduates. Chemistry was one of the four major subjects in this program. The others were physics, mathematics, and engineering drafting and elementary mechanics.

This program was on a forty-hour per week basis for students and of such intensity that a freshman student in a good engineering college might be congratulated on its successful completion. The chief difficulty during the program was to prevent the students from being hired by needy industrial organizations before the summer course was completed. The work in chemistry was similar to college general chemistry, but especially rearranged so that industrial applications were used to illustrate the basic ideas of atomic and molecular theory and chemical equilibrium. Laboratory work was included. The course was given by about 75 full-time chemistry teachers teaching about 150 classes in about 100 different towns.

Chemistry in the Evening Extension Courses

Most of the subsequent courses were on a part-time basis, chiefly in the form of evening courses meeting two, three, or four times a week. In general, a given student participated in only one or two courses. There was a great demand for the elementary engineering chemistry course, so that during the winter of 1942 most of the enrollment was in this with as many as 60 classes under way simultaneously in as many different localities in the State. Subsequently, the demand for this type of work dropped off, and the classes that were operated became more and more specialized with respect to the needs of a particular location or industry.

Most important among these were

the courses in Technical Analysis and Testing, in Industrial Organic Chemistry, in Plastics, and in Textile Chemistry. However, even courses with the same name varied a very great deal, according to local needs. Thus, in some instances the Plastics course was of graduate school calibre, with registration confined to chemists with a B. S. or higher degree. In other cases, this course was for laboratory technicians, operators, etc. with little background in chemistry.

Determination of Course Content

There was a continual changing in the course outlines, based on changing needs, and on criticism by students, instructors, and employers of "post graduates" of the courses. Ideas on prerequisites changed markedly as the result of the work of groups of students without the conventional background.

In most instances high school facilities were used. In a few cases the laboratories of small colleges were available. In other instances industrial laboratories were used. In general, even in the very first part of the training, an extension chemistry stockroom system was set up so that all necessary supplies, apparatus, and equipment could be made available quickly to supplement what was available locally. In extreme cases a laboratory was set up in empty rooms, provided with only heat, light, water and drains.

It was only after lengthy discussion and careful consideration that it was decided to include individual laboratory work in all courses. It certainly was desirable because students preparing for almost immediate entrance into industrial work should certainly have experience handling materials with their own hands. On the other hand, laboratory work in off-campus extension operations involves complex problems of facilities and supplies. These were successfully solved by the special chemistry stock department, and the students in all courses benefited greatly from these facilities.

Texts, Outlines, Films, and Demonstrations

The student purchased a standard text, and in some cases a handbook, slide rule, or other necessary material. All students and instructors were supplied with complete and detailed mimeographed instructions for laboratory experiments, and with an outline for the course. In some cases, the outline was expanded into special notes because the textbook was inadequate, or to avoid scattered assignments in the textbook.

Some films and demonstrations were used in the instruction, but this was limited because these facilities necessarily had to be mobile.

Instructors

Even experienced teachers were expected to follow carefully prepared outlines because the course content and objectives were so different from conventional courses.

The problem of finding suitable instructors was complex. Although unique and of considerable magnitude the staffing of the summer programs was simple because of the availability of regular college teachers. These were recruited from various points in the Eastern United States, but mostly from Pennsylvania.

For the evening courses the best teachers were those from smaller colleges. They were all excellent teachers as well as energetic individuals who easily adjusted themselves to entirely new objectives and a different type of student and subject. Many instructors were recruited from industry, and in most cases, these too were entirely satisfactory, even though they were inexperienced and were simultaneously carrying on their regular industrial duties. High school teachers were used as instructors only when they had at least a B. S. in chemistry from a first rate college, and were otherwise superior instructors. They were never used as instructors in their own school.

From the first interview on until the end of the course the instructors were charged with the responsibility of conducting instruction on a high plane regardless of difficulties encountered.

Coordination, Supervision, Examinations

The coordination and control of the instruction was achieved largely through the efforts of a small number of experienced and responsible college chemistry teachers who acted as supervisors. Their duties included assistance in choice of teachers, conferences relating to the type of course needed, if any, qualifications of students, adequacy of facilities, emergency delivery of supplies and apparatus, and filling in as a substitute teacher. Their main function was classroom and laboratory visitation to aid the teacher and student, to observe the adequacy of the course as outlined, to confer with students, and with the local extension service manager. They often gave special lectures and demonstrations, and always gave advice and encouragement to discouraged teachers. The supervisors were the keystone of the instructional program. A weekly meeting of all chemistry supervisors provided for general coordination and contact with the campus. A few round-table conferences of groups of teachers and supervisors were highly valuable, but required too much travel time to be regularly feasible.

In each course, one or two examinations were prepared by the supervisors and given by the teachers. When numerous classes of a given

course were in session on the same time schedule, these tests were uniform. These aided in retaining some uniformity in spite of the varied backgrounds of the teachers. In many cases, uniform tests were not given because of the specialized nature of the course.

Conclusions

The persistence and willingness to work and the enthusiasm of the average student in the program were truly remarkable. The great majority kept the entire teaching and administrative staff continually on the alert. It was this student enthusiasm coupled with the careful and conscientous work by teachers that made the program succeed in spite of limited time for detailed plans and arrangements.

The program met the urgent needs of the moment, but in addition, it uncovered the further possibilities of continuation training for chemists, improvements in high school chemistry instruction, and satisfaction of the layman's needs for understanding science.

The further development of such chemistry instruction by extension is a challenge to young and ambitious chemists (not just chemistry teachers). To organize the ideas, convince the necessary managers of finances, to assemble and inspire a staff is as big and fine a job as one can imagine. There is in it enough satisfaction for anyone or any group, and there is inestimable value to chemists and to the community.

Honored: Dr. Roy C. Newton, F.A.I.C., vice president in charge of research, Swift & Company, who has been chosen to receive the 1952 medal of Industrial Research Institute, Inc., which has been awarded annually since 1945 for "outstanding accomplishment in leadership in or management of industrial research which contributes broadly to the development of industry or the public welfare."

Under Dr. Newton's leadership, the Swift research organization has demonstrated the tremendous value of the scientific method when applied in the meat packing industry, and new and improved food products of general public value have resulted. Dr. Newton has been a powerful exponent of industrial grants-in-aid for basic research at colleges and universities. In the past ten years, he has obtained over $2,000,000 from his company to support these programs.

He is a graduate of Oklahoma Agricultural and Mechanical College and received the Ph.D. degree from the University of Chicago in 1924. Active in scientific organizations, he founded the National Chemical Exposition and was one of the pioneers of the Industrial Research Institute.

Moved: Dow Corning Corporation to 600 Fifth Avenue, New York 20, N.Y.

The Perkin Medal: Awarded to Dr. Robert M. Burns, chemical director of the Bell Telephone Laboratories, by the American Section of the Society of Chemical Industries. Presentation will be made January fourth, following a dinner in the medalist's honor at the Waldorf-Astoria, New York, N.Y. The honor is conferred for achievement in industrial chemistry, and Dr. Burns' accomplishments include important applications of chemistry to problems of the communications industry.

New Officers: Elected by the International Fat and Oil Commission of the Union of Pure and Applied Chemistry: President, Dr. Foster D. Snell, F.A.I.C.; Vice President, Dr. H. Sturm, Switzerland; Secretary-treasurer, Jean Vizern, France. They will hold office until the next meeting of the Union in Sweden in 1953.

Elected: John T. Gossett, president of Central Scientific Company, Chicago, Ill., as chairman of the Board of Directors of both the Cenco Corporation, parent stock-holding company, and the Central Scientific Company.

Twenty-five Years of Service: Completed this year by Mona Oser, F.A.I.C., chief biologist of Food Research Laboratories, Inc., 48-14 33rd Street, Long Island City 1, N.Y.

1951 Nobel Prize in Chemistry

The 1951 Nobel Prize in Chemistry was awarded jointly to Dr. Glenn T. Seaborg, F.A.I.C., and Dr. Edwin M. McMillan, both of the University of California at Berkeley, "for their discoveries in the chemistry of the trans-uranium elements." The presentation ceremonies will take place in Stockholm, Sweden, on December 10th.

Associate Director for Research and Development: Dr. Sol Skolnik, who is now with the U.S. Naval Powder Factory, Indian Head, Maryland. He was formerly with the U.S. Naval Ordnance Test Station, China Lake, Calif.

One Hundred Years Old: The American Pharmaceutical Association, which was formally organized in Philadelphia, October 6-8, 1852. The October 15th meeting of the New York Branch of the Association commemorated a meeting held exactly one-hundred years before at the New York College of Pharmacy building.

Moved: Rietz Manufacturing Company, equipment manufacturers, to 150 Todd Road, Santa Rosa, Cal.

COUNCIL

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President-elect, Lincoln T. Work
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National Council Meetings

Meetings of the AIC National Council will be held at The Chemists' Club, 52 E. 41st Street, New York, N.Y., at 6:00 p.m., on the following dates:

January 9, 1952

April 9, 1952

Appointed: Dr. Hans O. Kauffmann, F.A.I.C., by the American Chemical Society, as general chairman of the 1952 Spring Meeting of the Society to be held in Buffalo, N.Y. He is director of research at Buffalo Electrochemical Company, and is also the representative of the Niagara AIC Chapter to the national AIC Council.

AIC Activities

C. P. Neidig, F.A.I.C.

New Jersey

Chairman, P. J. Gaylor
Chairman-elect, Dr. Cecil L. Brown
Secretary, Dr. H. W. Mackinney
Treasurer, Dr. E. R. Hanson
Representative to National Council,
Dr. C. L. Brown

The first meeting of the current year was held October 30th at the Military Park Hotel, Newark, N.J. Dr. Henry L. Cox, manager of the Chemical Division of Corn Products Refining Company, addressed the group on "Synthetic Gems, Their Production and Lore." The speaker's interest stems from his former association with Linde Air Products and is now continued as a hobby. The meeting was well-attended by both members and wives.

Pennsylvania

Chairman, Ronald J. Baird
Chairman-elect, Adalbart Farkas
Secretary-Treasurer, John Staub
Representative to National Council,
Marcus Sittenfield

At the meeting held October fourth, Dr. C. E. Waring, vice president of the Davison Chemical Company, gave a very interesting and informative talk on "Recent Advances in the European Chemical Industry."

On December 6th, Dr. Emil Ott will be honored by the Pennsylvania Chapter with an Honor Scroll awarded for his activities in organizing meetings and other activities for the chemists at which advancement of chemical knowledge has been a prime objective. This is a dinner meeting to be held at the Penn-Sheraton Hotel in Philadelphia. Our president, Mr. Lawrence H. Flett, will present the award and Dr. Walter J. Murphy will speak about the activities of the recipient.

The third meeting of the year will be held at the Engineers' Club in Philadelphia. Dr. P. D. Foote, vice president of the Gulf Oil Corporation, will address the meeting on the interesting topic of "Middle East Petroleum." The date of this meeting is February 7th.

The final meeting of the year, May 1, 1952, will be devoted to the presentation of Student Medals to outstanding seniors in the various colleges of this area. A speaker for this occasion will be announced later.

To Texas: Dr. Louis Koenig, F.A.I.C., formerly with Stanford Research Institute, Stanford, Calif., who is now connected with Southwest Research Institute, San Antonio 6, Texas.

Science Editor: Ora Blanche Burright, F.A.I.C., who is now working for The Medical Arts Publishing Foundation of the University of Texas and connected with the new postgraduate medical school of the State of Texas.

Speaker: Robert L. McEwen, F.A.I.C., Buffalo Electro-Chemical Company, Buffalo, N.Y., will discuss "Peroxide Bleaching", on January 8th, as one of the industrial speakers in the Pulp Technology course of the Chemical Engineering Department of the University of Maine, Orono, Maine.

On Leave: Irving Reich, F.A.I.C., research group director with Foster D. Snell, Inc., New York 11, N.Y. He will study at the University of Southern California for the Ph.D. degree, and carry out investigations in the physico-chemical theory of detergency.

Speaker: Dr. Gustav Egloff, Hon. AIC, who spoke before the student affiliates of the Chicago Section ACS, on October 19th, and before the Chicago Post of the Society of American Military Engineers, October 25th, on "The Importance of Engineers in the Military and our Economy". On November first, he participated in a three-man panel on the Petroleum Industry, as a part of the Sixtieth Year Convocation of Drexel Institute of Technology. The panel theme was "Human Resourcefulness—the Dominating Element for a Petroleum Industry," and Dr. Egloff contributed "The Petroleum Industry in Foreign Lands." On November fifth, Dr. Egloff appeared on WGN-TV, Chicago, in connection with the API Convention, where he discussed the new U.O.P. Platforming process to produce motor fuels, aviation gasoline and aromatics.

First Position: AIC Student Medalist William N. McElroy, 1951 graduate of the University of Southern California, is now research chemist for the Atomic Energy Commission at North American Aviation, Downey, Calif.

Teaching Assistant: AIC Student Medalist James A. Ibers, 1951 graduate of the California Institute of Technology, who is now doing graduate work and teaching at this university.

Will You Come?

Dec. 13, 1951. New York Chapter. Hotel Commodore, New York. Panel Discussion, "What Industry Expects of You."

Jan. 17, 1952. New York Chapter. Hotel Commodore, New York. Presentation of Honorary AIC membership to Dr. John E. McKeen, F.A.I.C. Reception, 6:00 p.m., South Room, courtesy of Charles Pfizer & Co. Dinner, 7:00 p.m. Century Room. Tickets $6.50. Send reservations to Dr. A. F. Guiteras, 117 W. 13th St., New York 11, N.Y.

Feb. 1, 1952. Chicago Chapter Presentation of Honorary AIC Membership to Dr. Ernest H. Volwiler, F.A.I.C. Details to be announced.

Feb. 7, 1952. Pennsylvania Chapter. Engineers' Club, Philadelphia. Speaker: Dr. P. D. Foote, vice president, Gulf Oil Corp., "Middle East Petroleum."

March, 1952. Date to be announced. New York Chapter. Discussion Meeting.

May 1, 1952. Pennsylvania Chapter. Presentation of Student Medals to outstanding college seniors in area. Speaker to be announced.

May 7-8, 1952. Annual Meeting of THE AMERICAN INSTITUTE OF CHEMISTS. Hotel Commodore, New York. Chairman of Arrangements Committee: Dr. Maurice J. Kelley, Nopco Chemical Company, Harrison, N.J.

May 22, 1952. Annual Meeting, New York Chapter. Program to be announced.

AIC Members who are in Washington, D.C., can find out about Washington Chapter meetings by telephoning the Chapter secretary, Paul E. Reichardt, at Republic 3275, Extension 221.

Elected: By the J. T. Baker Chemical Co., Phillipsburg, N. J., Dr. Joseph R. Stevens as vice president. He was formerly technical director of the company.

Opportunities

Doris Eager, M.A.I.C.

Positions Available

Associate Director. Technical & administrative services, coordinator of research department, including purchasing, budgeting. Capable of handling responsibility. Organic detergents. Metropolitan Area. Salary high. Box 127, THE CHEMIST.

Assistant Director. Capable of supervising operations from the laboratory through pilot plant development. Petroleum, detergents, edible oils, soaps. Supervisory and administrative capacity. Metropolitan area. Salary $10,000 or better. Box 129, THE CHEMIST.

Lubricating Grease Expert. Medium-size chemical company desires top-notch man with vision and drive, to plan and carry through a research program designed to increase the sales of grease bases and additives, and expand company operations in the lubricant field. Must be abreast of all new developments. High salary and opportunity for the right man. Location near New York. Box 121, THE CHEMIST.

Product Wanted

Have you a small scale marketable organic chemical or specialty product which needs manufacturing facilities? Capital and plant with well-equipped laboratory available in metropolitan N.Y. Sales service available. Box 123, THE CHEMIST.

For Sale in California

Chemical Plant: formerly used as distillery-winery, and manufacture of grape concentrate, etc. Located on 24-acres land, 3-million gallons concrete and wood storage, water purifying system, 600 H.P. boilers (practically new), machine shop, refrigeration equipment, pump, warehouse, two dwellings, etc. Replacement value: one-million dollars. Price $200,000. cash. Box 1211, THE CHEMIST.

Chemists Available

Chemist. ACS, AIC, AAAS, seeks managerial position in production control. Experience (9 yrs.): batteries, glues & gelatines, library, com'l testing, textiles, electronics. Age 32, married. Location N.Y., N. J. Box 120, THE CHEMIST.

Chemist. B.S. in chemistry, single, age 33, 7 years experience in water chemistry, sanitary, and water conditioning, covering work in analyses, product development, technical service and production supervision. Box 122, THE CHEMIST.

Chemist. B.S., Age 31, married. Member ACS, AIC. Two years experience technical sales. Desires responsible position utilizing chemical training in technical service, new product development, management. Prefer Metro N.Y., N.J. location. Box 124, THE CHEMIST.

Graduate Fellowships: Granted by S. C. Johnson & Son, Inc., to the University of Wisconsin, Ohio State, Marquette, and Northwestern. Dr. J. V. Steinle, F.A.I.C., stated that this is "part of the company's long range program in fundamental research on wax technology . . . Industrial support of fundamental research in university laboratories is important. It creates opportunities and provides help for deserving students and leads to the discovery of basic data on subjects of general interest to the wax industry and allied fields."

Scholarships: For graduate study in the physical sciences, awarded by the Central Scientific Company, Chicago, for the academic year 1951-52, to Edwin F. C. Cain of Michigan State College, and Josef Anton Hofmann, of Harvard.

For Your Library

Introduction to Textile Finishing

By J. T. Marsh. John Wiley & Sons, Inc. 1951. 552 *pp.* 5¾" x 8¾". $5.50.

This volume covers many of the English processes and developments in the field of textile finishes. An attempt has been made to collect a number of scattered references from numerous journals related to the field and to so arrange them that a systematic review of the modern techniques in this field is given.

A number of excellent chemical processes are thus made available to those most concerned with the art. The section on wool processing is particularly good since it covers all of the more recent advances in the finishing of woolen fibers.

Such a volume is not only most useful to those in the field, but most interesting to those who wish to secure a knowledge of the numerous methods of finishing textile fibers.

—William B. Canfield, F.A.I.C.

The Pectic Substances

By Z. I. Kertesz. Interscience Publishers, Inc. 1951. 628 *pp.* 9¼" x 6½". $13.50

The pectic substances are the cementing link between plant cells, giving rigidity to the growing plant. They are present in large quantities in citrus fruit, apples, sugar beets, flax stalks, and other plants. Many microorganisms contain pectolytic enzymes. In some fruits these enzymes appear during ripening and storage, resulting in softening of the tissue. Pectins found many commercial uses, especially in the food industry and pectolytic enzymes are marketed and profitably employed in the clarification of fruit juices and wine.

Dr. Kertesz has admirably achieved his goal to present a comprehensive monograph that will be of help to the researcher as well as the technologist.

—Dr. Henry Tauber, F.A.I.C.

Sourcebook on Atomic Energy

By Samuel Glasstone, Consultant, Atomic Energy Commission. D. Van Nostrand Co. 546 *pp.* $2.90.

This book has been reviewed so favorably, thoroughly and competently elsewhere that little remains to be said about it. There is a limit to which any subdivision of science may be popularized without loss of caste and stature. Atomic energy draws from many subdivisions of science, practically all of which are beyond the range of human visibility. It is doubtful if anyone could understand the intricacies of the indirectly observed and computed motions of submicronic particles without a certain familiarity with the laws governing motion in the macrocosmos. As scientist, educator, and writer, no one knows this better than Prof. Glasstone, who is, furthermore, a meticulous bibliographer and conscientious historian of science. Therefore, his book contains something of value and interest for a wide range of readers from the beginner and dilettante to the advanced worker and professional writer. It is not only a sourcebook, prepared with access to the full resources of the AEC, but it could just as well serve as an authentic introduction to the serious study of nuclear physics and chemistry.

The source book is another contribution to nuclear science by a chemist, and calls to mind the outstanding services to nucleonics by chemists such as Ida Noddack, Otto Hahn, H. Urey, and G. T. Seaborg, F.A.I.C.

—Dr. E. E. Butterfield, F.A.I.C.

McGraw-Hill Directory of Chemicals and Producers 1952

Editor: Thomas L. Bonnitt. Second Edition. McGraw-Hill Publishing Co. 626 *pp.* 6" x 9¼". $20.00.

With its second edition this invaluable aid to chemical buyers is getting into its stride. Every effort has been made to list all commercially available chemicals, and for each chemical, its prime manufacturers. In addition, the listing of manufacturers, which appears as a second section of the book, contains the names of one or more principal officers, telephone number, and of employees. The format of the book is very good; a very clear type face with plenty of open space has been used, and the coverage is complete. Anyone who purchases chemicals either in large quantities or in laboratory quantities will find that this easily becomes the source reference of first choice.

—Karl M. Herstein, F.A.I.C.

Organophosphorus Compounds

By Gennady M. Kosolapoff. John Wiley & Sons, Inc. 1950. 376 *pp.* 6" x 9¼". $7.50

Professor Kosolapoff, before joining the faculty at Alabama Polytechnic Institute, spent several years as a research chemist for Libby-Owens Ford Glass Company and Monsanto Chemical, so that he brings to his discussion of the phosphorous compounds wide practical experience as well as thorough theoretical knowledge. His work is further enhanced by his familiarity with his native Russian as some of the data and methods covered in the book have been so far unavailable or difficult for English-speaking chemists to find.

This well-documented volume covers the field completely up to January, 1950, and will prove very useful to the organic chemist interested in methods of preparation of the various phosphorous compounds.

—Dr. Frederick A. Hessel, F.A.I.C.

Elastomers & Plastomers

Vol. III. Testing and Analysis; Tabulation of Properties. Edited by R. Houwink. Elsevier Publishing Co., Inc. 1948 174*pp.* 7" x 10¼". $3.50

This is a condensed summary of the properties of plastics, methods and results of testing, replete with information otherwise not readily available. It contains "Methods of Testing," by J. H. Teeple; "The Chemical Analysis of Polymers," by A. G. Epprecht; "Properties of Elastomers (Tabulated)", by B. B. S. T. Boonstra; and "Properties of Plastomers (Tabulated)," by J. W. F. van't Wout and R. Houwink.

—Dr. John A. Steffens, F.A.I.C.

Industrial Water Pollution

Survey of Legislation and Regulations. By R. S. Aries & Associates. Chemonomics, Inc. 1951. 142 *pp.* 6" x 9". *Lithoprint. Paperbound.* $5.00.

This handbook lists and discusses the regulations on water pollution now in effect in every state and territory of the United States. The states are listed in alphabetical order. The water standards of interstate agencies are also included. State water pollution control agencies are listed in the appendix.

Chemical Books Abroad

Rudolph Seiden, F.A.I.C.

Almqvist & Wiksell, Stockholm: *Pars pro toto,* by Alfred Peyser, 1950, 196 pp., Kr.12. Research workers—who are often faced with the problem of interpreting abbreviations found in English, German, French, Italian, Spanish, or Scandinavian literature—will appreciate this collection of abbreviations of journal names, scientific terms, degrees, etc. It is regrettable that this collection is incomplete with respect to abbreviations used in America; e.g., the A.C.A. is not mentioned, and A.I.C. is listed to stand for Associate of the Institute of Chemistry and not also for American Institute of Chemists.

Mundus Verlag, Stuttgart: *Entdeckung der Elemente,* by E. Pilgrim, 1950, 432 pp. A well-illustrated history of the discovery of the elements until 1946 (the elements 97 and 98, discovered in 1949 and 1950 are only briefly mentioned). The inclusion of the often fascinating biographies of the men and women who discovered the elements is laudable. Of special interest are those of our contemporaries which can hardly be found elsewhere so complete, e.g., Walter and Ida Noddack, Dirk Coster, Georg von Hevesy, Lise Meitner, Otto Hahn, Willy Marckwald, Andre Debierne, and Frederic Soddy. It is to be hoped that a new edition of the book will discuss in detail the discoveries made in recent years and that it will include the biographies of the American discoverers Seaborg, James, Morgan, Ghiorso, etc. I would like to suggest the publication of an English edition of this book, after it has been brought up to date.

Wilhelm Ernst & Sohn, Berlin (Eppac, London W. C. 2). *Einfluesse auf Beton und Stahlbeton,* by A. Kleinlogel, K. Walz and H. Vierneller. 5th ed. with 76 ill., DM 28. A handy encyclopedia for practical use, describing hundreds of chemical, mechanical and other influences upon concrete and steel concrete; with a supplementary dictionary of chemical and technical terms in English and French.

Verlag Chemie, Weinheim/Bergstr.: *Der Ingenieur im Chemiebetrieb,* by Friedrich Jaehne, 1951, 204 pp. with 42 ill., DM 14.80. Based on 40 years of experience in the chemical industry, the author discusses

the duties of engineers as associates of manufacturing chemists. Construction of laboratories and plants, various types of equipment and procedures, energy sources, transportation, waste disposal, and cost accounting are the more important subjects dealt with. • *Autoren-Namen als chemische Begriffe*, by Kurt G. Wagner, 1951, 264 pp., DM 14.80. A well-made encyclopedia of 1492 chemical terms derived from the names of scientists—valuable for those who read them in scientific literature and do not know or cannot remember their meanings, e.g., Eilenmeyer's rule, Fourier analysis, Friedl-Craft's reaction, Karl Fischer reagent, Sweetland filter, etc. • *Teilchengewichts-Bestimmung organischer Verbindungen mit Hilfe der Dialysenmethode*, by Hans Spandau, 1951, 86 pp., paper covers, DM 12.20. Dialysis can be used advantageously for the determination of the true weight of particles of organic substances dissolved in water, ethyl alcohol, or dioxan. • *Gmelins Handbuch*, 8th ed., was reviewed in the April 1951 issue of THE CHEMIST. The new volume on *Platin*—No. 68,A,6—includes the alloys of Os, Ir, and Pt. • *Vom Wasser*, by W. Husmann, 1951, 430 pp. with 163 ill., DM 29.80. Volume 18 of the year books for water chemistry and technic of water purification contains 29 articles, most of them progress reports.

Johann Ambrosius Barth, Leipzig: *Kristallchemie und Kristallphysik metallischerwerkstoffe*, by Franz Halla, 2nd ed., 638 pp. with 347 ill. paper covers, DM 45. The properties of metals and their allovs are presented from crystal-chemical and crystal-physical viewpoints. 1050 references. • *Temperature Messung*, by F. Henning, 1951, 294 pp. with 80 ill., paper covers, DM 25.80. A clear presentation of the whole range of temperature from absolute zero point to that of the interior of the stars and of the dependable methods and instruments for measuring temperature.

Theodor Steinkopff, Dresden-B1.: *Zement*, by F. Wecke and W. A. Kaminsky. 3rd ed. with 93 ill., DM 13. A brief treatise on the manufacture of various types of cement, particularly of Portland cement with 893 literature and (chiefly German) patent references.

Schotanus & Jens, Utrecht: *Chemical Constitution and Antifungal Action of Sulphur Compounds*, by Hein Louis Kloepping, 1951, 142 pp. with 26 ill. This thorough investigation of 99 organic fungicides puts emphasis on sulphur compounds. Dithiocarbamate and bisdithiocarbamate derivatives were found to possess high antifungal activity and specificity.

Books for a Chemist's Christmas

(A list of recent books, of scientific but non-technical nature, that will bring insight, vision, or pleasure to the reader.)

Torchbearers of Chemistry
Portraits and brief biographies of about 225 scientists.
Academic Press. $8.00

Chemistry—Key to Better Living
Includes a history of the first 75 years of the ACS.
The American Chemical Society. $4.00

The Growth of Physical Science
By Sir James Jeans.
Cambridge University Press. $3.75

Science and Common Sense
By James B. Conant, Hon.AIC. The relationship of science to industry and human welfare.
Yale University Press. $4.00

Chymia
Annual studies in the history of chemistry. First Vol. 1948.
University of Pennsylvania Press. About $4.00 a volume.

Herbert H. Dow, Pioneer in Creative Chemistry
By M. Campbell and H. Hatton. The biography of an industrialist.
Appleton-Century-Crofts, Inc. $3.50

New Atoms — Progress and Some Memories
By Otto Hahn
Elsevier Publishing Co. $1.75

Science is a Sacred Cow
By Anthony Standen. Delightful spoofing at science.
E. P. Dutton & Co. $2.75

—R. S. ARIES—
& Associates
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Chemical Engineers
And Economists
COMMERCIAL CHEMICAL DEVELOPMENT
Process Analysis • Market Research Surveys — Technical & Economic Evaluations • Application Research Product Development • Design and Initial Operation of Process Plants • Licensing and Sale of Processes
400 Madison Ave. New York 17, N.Y.
ELdorado 5-1430

Source Book of Atomic Energy
By Samuel Glasstone. A compendium of modern physics in semi-popular form.
D. Van Nostrand & Co. $2.90

From Euclid to Eddington
By E. T. Whittaker. A most lucid exposition of modern physics.
Cambridge University Press. $3.75

Nobel, The Man and His Prizes
Edited by the Nobel Foundation.
University of Oklahoma Press. $6.00

The Genius of Industrial Research
By D. H. Killeffer, F.A.I.C. Includes quotations from men in the industry.
Reinhold Publishing Corp. $4.50

Life, Its Nature and Origin
By Jerome Alexander, Hon.AIC.
Reinhold Publishing Corp. $5.00

American Chemical Industry: A History
By Williams Hayes. In six volumes. Per set $60.00
D. Van Nostrand Co., Inc.

The Art of Clear Thinking
By Rudolph Flesch
Harper & Bros. $2.75

Josiah Willard Gibbs
By L. P. Wheeler. "By all odds the best biography of Gibbs."
Yale University Press. $4.00

Information

"University Research Potential. A Survey of the Resources for Scientific and Engineering Research in American Colleges and Universities." 115 pp. 8½"x11". For information, write to Secretary of the Engineering College Research Council, Room 7-204, 77 Massachusetts Ave., Cambridge 39, Mass.

"New Stokes Microvac Pump, Model 812-F." Data sheet. F. J. Stokes Machine Co., Philadelphia 20, Pa.

"Lead Cyanamid DK825, anti-rust pigment." Data and samples. Millmaster Chemical Corp., 11 West 42nd St., New York, N.Y.

"Corrosion Notebook." Data on corrosion resistance of stainless tubing and pipe. Carpenter Steel Co., Alloy Tube Div., Union, N. J.

"Chemical Spectroscopy." By Dr. Wallace R. Brode. 52-page illustrated booklet. $2.35. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

"New Flotation Separator Bulletin FS-21" Sven Pedersen Sales Corp., 35-21 Eleventh St., Long Island City 6, N.Y.

"Elastomers Plastomers." Bulletin. Foster D. Snell, Inc., 29 W. 15th St., New York 11, N.Y.

"New Reagent Chemical Catalog." 256-pp. J. T. Baker Chemical Co., Dept. 30, Phillipsburg, N. J.

"BC-1 Pressure Transducer." Electromechanical Division, Atlantic Research Corp., 812 N. Fairfax St., Alexandria, Va.

"Synthetasine 100. Epoxy Resin Protective coating-liner for steel shipping containers." Leaflet. Synthetasine Protective Coatings, Inc., 600 Fifth Ave., New York 20, N.Y.

"For Thorough Mercury Cleaning." Bulletin. Bethlehem Apparatus Co., Hellertown, Pa.

"Labitems". Publication of The Emil Greiner Co., 20-26 N. Moore St., New York 13, N.Y.

"Wheeler Fine Particle Reduction Mills." Now available for outright purchase. For information write: J. Mack Nevergole, Vice president, The Roland G. E. Ullman Organization, Inc., 1015 Chestnut St., Philadelphia 7, Pa., or F. L. Yetter, Vice President, C. H. Wheeler Manufacturing Co., 19th St. & Sedgley Ave., Philadelphia 32, Pa.

"Read Standard Chemical Processing Equipment, Standardaire Blowers." Bulletin 51759. A. K. Brennan, Read Standard Corp., York, Pa., or C. J. Surdy, Read Standard Corp., 370 Lexington Ave., New York 17, N.Y.

"Super-Sniffer, Ferret, Snooper, Classmaster, and Civion Geiger Counters." Information. The Radiac Co., Inc., 489 Fifth Ave., New York 17, N.Y.

"Hydrogen Peroxide in the Manufacture of Viscose." Bulletin No. 30, Buffalo Electro-Chemical Co., BECCO Sales Corp., Station B, Buffalo 7, N.Y.

"Commercial Chemical Development." Booklet. R. S. Aries & Associates, 400 Madison Ave., New York 17, N.Y.

"What's New for the Laboratory?" Catalog Supplement. Scientific Glass Apparatus Co., Inc., Bloomfield, N. J.

"Conductivity Cell for Ultra Pure Water." Information. Industrial Instruments, Inc., 17 Pollock Ave., Jersey City 5, N. J.

"Liquid Phase Heat Transfer Equipment." Information. American Hydrotherm Corp., Thermal Engineers, 33-70 12th St., Long Island City 6, N.Y.

"Penfield Mono-Bed Demineralizer." Catalog. Edward H. Clohessy, General Manager, Penfield Manufacturing Co., Inc., 19 High School Ave., Meriden, Conn.

"Reilly 4-Vinylpyridine." Samples and technical information. Reilly Tar & Chemical Corp., Indianapolis, Ind.

"Pocket-size pH Meter and probe unit." Information. Analytical Measurements, Inc., 585 Main St., Chatham, N.J.

Seasons Greetings to All

Now Christmas comes, 'tis fit that we

Should feast and sing and merry be.

—POOR ROBIN'S ALMANAC

Condensates

Ed. F. Degering, F.A.I.C.

Buckman Labs., Inc.

Today we are at the crossroads—either we learn how to scientifically fertilize plants for the production of food both quantitatively and qualitatively adequate for survival, or we reduce our world population by the slow process of starvation until we finally reach a balance with nature's way of doing things. Nature can no longer cope with the pace man has set—in the future fertile soils can remain fertile only as man learns, through science, to keep them fertile.

—ROGER H. BRAY

Alphamine red R, an indicator used in the chromatographic separation of amino acids and both mono-and dialkanoic acids, is now available from Herstein Laboratories, Inc.

Fantastic as it seems, the effective adsorbent surfaces of a pound of activated carbon are actually equal in area to about 125 acres.

A heat-treated Orlon fabric, black in color, is resistant to temperatures of about 1400°F.

Cotton fabrics may be made 10 percent stronger by a hydrocyanic acid treatment.

The use of copper and zinc sprays successfully controlled tomato blight in the middle west during the past season.

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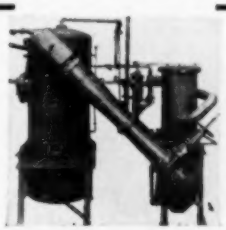

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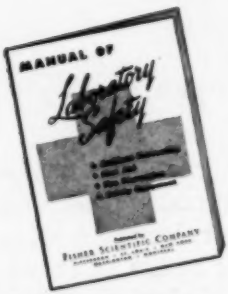

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